

# NAEB

## TV Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

14 Gregory Hall

Urbana, Illinois

Phone 7-6611, Ext. 3394

### NAEB ENGINEERING NEWSLETTER No. 4

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Here is Issue No. 4 of the NAEB Engineering Newsletter. We're a bit late getting it out but circumstances have prevented us from going to press sooner.

We'd like to call your attention to the table of contents above and the two articles on 16 mm film and also to the article on target blanking problems. We believe those of you in television will find them of considerable interest.

We'd also like to invite AM or FM engineers to contribute to these columns. We know many of you read this material and we could use some articles of interest to audio engineers.

Best wishes for a Merry Christmas and a Happy New Year.

Cecil S. Bidlack  
December 12, 1955

CSB:cr

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TV TECHNICAL TIPS No. 12  
September, 1955  
By CECIL S. BIDLACK, NAEB TV ENGINEER

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MR. CLEMENT E. LA FOND HAS BEEN SELECTED TO ATTEND THE TV ENGINEERING WORKSHOP AT EAST LANSING, MICHIGAN, IN THE PLACE OF MR. LARRY REED WHO WILL BE UNABLE TO BE PRESENT. MR. LA FOND IS CHIEF ENGINEER OF THE MEMPHIS COMMUNITY TELEVISION FOUNDATION, MEMPHIS, TENNESSEE, WHICH IS NOW SEEKING A CONSTRUCTION PERMIT FOR EDUCATIONAL CHANNEL 10 IN MEMPHIS. HE WAS FORMERLY EMPLOYED BY KUHT AND KUHF-FM IN HOUSTON, TEXAS. HE HOLDS BOTH A B.F.A. AND AN M.A. IN RADIO AND TELEVISION FROM THE UNIVERSITY OF HOUSTON. HE NOT ONLY TAUGHT AT THE UNIVERSITY BUT ASSISTED IN THE INSTALLATION AND WAS ACTIVE IN THE OPERATION OF BOTH STATIONS.

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THE FIFTH ANNUAL FALL SYMPOSIUM OF THE IRE PROFESSIONAL GROUP ON BROADCAST TRANSMISSION SYSTEMS WILL BE HELD IN WASHINGTON, D. C., ON SEPTEMBER 23 AND 24. THE TECHNICAL PROGRAM WILL BE BUILT AROUND THE NEW TECHNIQUES DEVELOPING IN THE FIELD OF BROADCASTING AND A CONSIDERATION OF TELEVISION SIGNAL PROPAGATION FACTORS AS RELATED TO TELEVISION ALLOCATION ENGINEERING. IN THE FIELD OF STANDARD BROADCASTING, PAPERS WILL BE PRESENTED DEALING WITH EXPERIMENTAL EXPERIENCE IN THE REMOTE CONTROL OF DIRECTIONAL AND HIGH POWER ANTENNA SYSTEMS. IN FM BROADCASTING NEW MULTIPLEX TRENDS WILL BE EXAMINED. IN TELEVISION THE LATEST FEATURES IN THE HANDLING OF COLOR PROGRAMS, THE INTEGRATION OF COLOR EQUIPMENT WITH MONOCHROME FACILITIES AND HIGHER POWER TRANSMITTING EQUIPMENT WILL BE THE SUBJECT OF PAPERS AND DISCUSSION. SPECIAL ATTENTION WILL BE DIRECTED TOWARD DEVELOPMENT OF NEW TIMESAVING TECHNIQUES USING MAGNETIC TAPE AND MAGNETIC STRIPE FILM. THIS DISCUSSION WILL HAVE APPLICATION IN EACH OF THE BROADCAST FIELDS OF ENDEAVOR.

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THE FALL CONVENTION OF THE SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS WILL BE HELD OCTOBER 3-7 AT THE LAKE PLACID CLUB, ESSEX COUNTY, N. Y. ONE OF THE HIGHLIGHTS OF THE MEETING WILL BE A ROUND TABLE ON OCTOBER 6 ON "PROBLEMS OF NETWORK BROADCASTING IN MONOCHROME AND COLOR." THIS WILL FEATURE ENGINEERS FROM NBC, ABC AND CBS AS WELL AS AT&T AND WTMJ-TV.

A SPECIAL SESSION WILL BE HELD FRIDAY MORNING, OCTOBER 7 DEVOTED TO EDUCATIONAL TELEVISION. THE SMPTE WILL WELCOME ATTENDANCE OF NAEB MEMBERS AT THIS MEETING AND APPRECIATE THEIR TAKING PART IN THE DISCUSSION. SPEAKERS WILL BE MRS. GERTRUDE BRODERICK OF THE U.S. OFFICE OF EDUCATION, E. ARTHUR HUNGERFORD, JR. OF THE METROPOLITAN EDUCATIONAL TELEVISION ASSOCIATION, INC. OF NEW YORK CITY, AND ALLAN DELAND OF THE EDUCATIONAL TELEVISION AND RADIO CENTER AT ANN ARBOR.

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THE AUDIO ENGINEERING SOCIETY'S ANNUAL CONVENTION IS SCHEDULED FOR OCTOBER 12-16 IN NEW YORK CITY.

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WE REGRET THAT MORE OF THE NAMES IN OUR NAEB TECHNICAL DIRECTORY ARE NOT FOUND IN THE DIRECTORIES OF THE THREE ORGANIZATIONS LISTED ABOVE. WE'D LIKE TO SEE THE CHIEF ENGINEERS OF OUR EDUCATIONAL RADIO AND TELEVISION STATIONS MEMBERS OF ONE OF THESE PROFESSIONAL SOCIETIES. EACH OF THESE SOCIETIES PUBLISHES A JOURNAL CONTAINING TECHNICAL PAPERS PRESENTED AT CONVENTIONS OR MEETINGS OF THE SOCIETY. MUCH TECHNICAL REFERENCE INFORMATION IS FOUND ONLY IN THESE PUBLICATIONS. ATTENDANCE AT THEIR TECHNICAL MEETINGS CAN BE VERY STIMULATING. IT MAY INTEREST YOU TO KNOW THAT YOU CAN BELONG TO ALL THREE OF THESE ORGANIZATIONS, FOR LESS THAN THE PRICE OF HALF A PACK OF CIGARETTES PER DAY.

WE'D BE HAPPY TO TELL YOU WHERE YOU CAN GET MORE INFORMATION ON MEMBERSHIP.

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WOSU-TV, THE OHIO STATE UNIVERSITY TELEVISION STATION ON CHANNEL 34, SHOULD SOON HAVE A TEST PATTERN ON THE AIR. WE SPENT FOUR DAYS THERE THE WEEK OF AUGUST 15 HELPING BOB HIGGY WITH THE INITIAL TESTS OF THE WOSU-TV VIDEO EQUIPMENT. THE STUDIO BUILDING IS COMPLETE, THE TOWER AND ANTENNA WERE INSTALLED A YEAR AGO. THE TRANSMITTER IS NEARLY READY TO GO WITH CAVITIES ON HAND TO BE INSTALLED AND COMPLETION OF THE TRANSMISSION LINE IS AWAITING THE ARRIVAL OF THE FILTERPLEXER.

WOSU-TV IS COMPLETELY RCA EQUIPPED WITH THE EXCEPTION OF A GPL KINESCOPE RECORDER. OFFICES, AIR-CONDITIONED STUDIOS AND TRANSMITTER ARE LOCATED IN A NEW BUILDING ON THE UNIVERSITY FARM A LITTLE OVER A MILE FROM THE MAIN CAMPUS. THE UNIVERSITY SHOULD BE VERY PROUD OF THESE FINE TELEVISION FACILITIES. IT IS HOPED THAT WITHIN THE NEXT TWO YEARS AN ADDITION TO THIS BUILDING WILL BE CONSTRUCTED TO HOUSE THE WOSU-AM-FM STUDIOS AND STAFF. THIS WILL ENABLE WOSU TO LEAVE THE "TEMPORARY" FACILITIES BUILT OVER 25 YEARS AGO AND REMODELED MANY TIMES IN THE INTERVENING YEARS.

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WE RECENTLY RECEIVED A REVISED EDITION (DEC. 1, 1954) OF PART 13 OF THE FEDERAL COMMUNICATIONS COMMISSION'S RULES AND REGULATIONS COVERING COMMERCIAL RADIO OPERATOR'S LICENSES. WITH REFERENCE TO SECTION 13.28 RENEWAL SERVICE REQUIREMENTS, RENEWAL EXAMINATIONS, AND EXCEPTIONS, WE BELIEVE ALL HOLDERS OF COMMERCIAL RADIO OPERATORS' LICENSES WILL BE INTERESTED IN THE FOLLOWING NOTE AT THE END OF THIS SECTION.

"BY ORDER DATED AND EFFECTIVE APRIL 4, 1951, THE COMMISSION TEMPORARILY WAIVED THE REQUIREMENT OF PRIOR SERVICE AS RADIO OPERATOR OR EXAMINATION FOR RENEWAL IN THE CASE OF ANY APPLICANT FOR RENEWAL OF HIS COMMERCIAL RADIO OPERATOR LICENSE. THIS ORDER IS APPLICABLE TO COMMERCIAL RADIO OPERATOR LICENSES WHICH EXPIRED AFTER JUNE 30, 1950, UNTIL FURTHER ORDER OF THE COMMISSION."



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TV TECHNICAL TIPS No. 13  
October, 1955  
By CECIL S. BIDLACK, NAEB TV ENGINEER

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THE 1955 NAEB TV ENGINEERING WORKSHOP, MADE POSSIBLE BY A GRANT FROM THE FUND FOR ADULT EDUCATION, IS NOW HISTORY. REPRESENTATIVES FROM EIGHT EDUCATIONAL STATIONS NOW ON THE AIR ATTENDED AT THE WORKSHOP. OTHERS IN THE GROUP WERE FROM STATIONS UNDER CONSTRUCTION OR IN PLANNING STAGES AND FROM CLOSED CIRCUIT STUDIOS.

IN OUR OPINION, THE 1955 WORKSHOP WAS BETTER THAN THE 1954 WORKSHOP IN MANY WAYS. BUT SINCE WE MIGHT BE SLIGHTLY BIASED, PERHAPS WE SHOULD AWAIT THE WRITTEN COMMENTS FROM THOSE ATTENDING, RESTRICTING OURSELVES TO REMARKING NOW MERELY THAT WE RECEIVED MANY FAVORABLE COMMENTS FROM THOSE IN ATTENDANCE. THE ENGINEERING COMMITTEE IS TO BE CONGRATULATED UPON ITS CHOICE OF WKAR-TV AS THE WORKSHOP SITE. WITH THE EXCELLENT COOPERATION OF THE WKAR-TV STAFF, THE PROGRAM MOVED AT A FAST PACE. WITH SOME DIFFICULTY, WE KEPT PRETTY WELL ON SCHEDULE, PROVIDING AN OCCASIONAL BREAK (UNSCHEDULED) IN THE DAYTIME SESSIONS AND STILL SEEING THAT SPEAKERS RECEIVED THEIR ALLOTTED TIMES.

IN SPITE OF THE FACT THAT OUR DAY BEGAN AT 8 A. M. AND RAN UNTIL 9 OR 9:30 P. M., WITH RUMP SESSIONS LASTING MUCH LATER, ATTENDANCE WAS 100% FOR THE WEEK WITH VERY FEW TARDY ONES FOR THE MORNING SESSIONS. OF THE TWENTY-FIVE WHO RECEIVED WORKSHOP GRANTS, ONLY BOB HIGGY OF WOSU-TV WAS UNABLE TO BE PRESENT. HE REMAINED IN COLUMBUS IN ORDER TO GET WOSU-TV ON THE AIR WITH TEST PATTERN. DAN JACOBSON OF THE BROADCAST BUREAU OF THE FCC ATTENDED AS AN INVITED GUEST AS DID CY BRAUM OF THE JCET.

TWO DAYS OF THE WEEK'S PROGRAM WERE DEVOTED TO KINESCOPE RECORDING, WITH LIGHTING, TRANSMITTERS, MICROWAVE, FILM, SWITCHING, AND STUDIO EQUIPMENT, AS WELL AS PERSONNEL RELATIONS, RECEIVING ATTENTION. OUR SPEAKERS WERE FROM TELEVISION EQUIPMENT MANUFACTURERS, ALLIED SERVICES, THE NETWORKS, AND OUR OWN EDUCATIONAL STATIONS AND INSTITUTIONS. THEY ALL DID A FINE JOB AND WE CAN BE PROUD OF OUR EDUCATIONAL TV PERSONNEL WHOSE TALKS AND THE TECHNICAL INFORMATION THEY IMPARTED WERE ON A PAR WITH THE OTHER SPEAKERS ON THE PROGRAM. IN MY OPINION, IT WILL BE A CHALLENGE TO KEEP THE PROGRAM OF FUTURE WORKSHOPS, IF SCHEDULED, ON A LEVEL WITH THE ONE JUST CONCLUDED.

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THE FALL GENERAL MEETING OF THE AIEE (AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS) WILL BE HELD OCTOBER 3-7 AT THE MORRISON HOTEL IN CHICAGO. THE BROADCAST GROUP OF THE AIEE WILL DEVOTE ITS ENTIRE TIME OCTOBER 4 TO THE TOPIC OF CLOSED CIRCUIT TV. ONE OF THE SPEAKERS WILL BE CARL MENZER, DIRECTOR OF WSUI AND KSUI AND CHAIRMAN OF THE NAEB ENGINEERING COMMITTEE.

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AND WHILE WE'RE ON THE TOPIC OF CLOSED CIRCUIT TV, DID YOU KNOW THAT THERE ARE NOW BETWEEN 1,000 AND 1,500 INSTALLATIONS OF INDUSTRIAL CLOSED CIRCUIT TELEVISION? MOST OF THESE ARE RELATIVELY SIMPLE SINGLE CAMERA INSTALLATIONS, ALTHOUGH SOME ARE MORE ELABORATE AND A FEW ARE EQUIPPED FOR COLOR. THE TV EQUIPMENT MANUFACTURING INDUSTRY BELIEVES THAT A BOOM IS NEAR IN INDUSTRIAL TV. AT PRESENT, THE LARGEST USER IS THE UTILITY INDUSTRY WITH RAILROADS, BANKS AND THE STEEL INDUSTRY ALSO IN THE FIELD. HOWEVER, THE POSSIBILITIES ARE ALMOST UNLIMITED AND WITH EVERY CURRENT INSTALLATION SAVING MONEY, INCREASING EFFICIENCY, OR ELIMINATING DANGER, IT IS BELIEVED THAT WITHIN THE NEXT FIVE TO TEN YEARS INDUSTRIAL TV COULD BECOME A 5 TO 10 MILLION DOLLAR BUSINESS. MORE THAN TWENTY MANUFACTURERS ARE NOW PRODUCING THIS EQUIPMENT BUILT AROUND THE FEATURES OF LOW COST AND RUGGEDNESS OF THE VIDICON PICK UP TUBE.

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CY BRAUM OF THE JCET IS REVISING THE JCET LIST OF CLOSED CIRCUIT TELEVISION FACILITIES IN USE AT EDUCATIONAL INSTITUTIONS. IF YOU HAVE CLOSED CIRCUIT FACILITIES AND ARE NOT INCLUDED IN THIS LISTING OR DO NOT RECEIVE HIS QUESTIONNAIRE IN THE NEAR FUTURE, HE'D BE GLAD TO HEAR FROM YOU. CY HAS ALSO RECENTLY PREPARED AN EXCELLENT PAMPHLET ON "LOW COST EDUCATIONAL TV STATIONS." HE'D BE GLAD TO SEND YOU A COPY UPON REQUEST. YOU MAY ADDRESS HIM AT 1785 MASSACHUSETTS AVENUE, N.W., WASHINGTON 6, D.C.

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NOTE FOR THE WEST COAST! RCA IS HOLDING ITS 9TH COLOR TV SEMINAR IN SAN FRANCISCO ON FRIDAY, OCTOBER 28 AND SATURDAY, OCTOBER 29. THE TWO-DAY COURSE WILL CONSIST OF TECHNICAL LECTURES AND DEMONSTRATIONS OF THE LATEST COLOR TECHNIQUES AND EQUIPMENT. THROUGH THE COURTESY OF KUON-TV THE LIVE COLOR CAMERA AND 3-V. FILM CAMERA DEMONSTRATIONS WILL BE HELD IN THEIR STUDIOS. RESERVATIONS MAY BE MADE THROUGH YOUR RCA BROADCAST FIELD REPRESENTATIVES.

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HAVE A NOTE FROM WALLACE GARNEAU, DIRECTOR OF BROADCASTING AT WMCR - WESTERN MICHIGAN COLLEGE OF EDUCATION AT KALAMAZOO, MICHIGAN WHICH SAYS, "WMCR HAS FOR SALE A 250 WATT GENERAL ELECTRIC FM TRANSMITTER, A 2-BAY GENERAL ELECTRIC ANTENNA, AND AN 8-BAY WESTERN ELECTRIC CLOVER LEAF ANTENNA (4200 POUNDS). THE TRANSMITTER IS FIVE YEARS OLD, IS IN GOOD CONDITION AND WAS GIVING US FINE SERVICE WHEN WE CHANGED TO 36,000 WATTS POWER. HERE IS AN OPPORTUNITY FOR A 10-WATT STATION TO INCREASE ITS POWER AT A TREMENDOUS SAVING. THE TRANSMITTER IS TUNED TO 91.1 MEGACYCLES. WMCR INVITES BIDS ON THE EQUIPMENT.

"IT MIGHT BE VERY HELPFUL IF A SECTION OF THE NEWSLETTER WERE DEVOTED TO AVAILABLE EQUIPMENT FROM MEMBER STATIONS, A NUMBER OF WHICH ARE INCREASING POWER."

WE'D BE HAPPY TO INCLUDE ITEMS SUCH AS THE ABOVE OR AN "EQUIPMENT WANTED" COLUMN. OUR BIGGEST PROBLEM IS TO GET THE INFORMATION REGARDING WHAT IS FOR SALE AND WHAT IS WANTED. NEWSLETTER DEADLINE IS THE 25TH OF THE MONTH; SO GET YOUR ITEMS IN BEFORE THAT DATE.

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DUMONT IS NOW FILMING THE JACKIE GLEASON SERIES ON THE ELECTRONICAM SYSTEM, USING 35 MM FILM. THE SYSTEM WAS DEVELOPED BY JAMES L. CADDIGAN OF DUMONT AND INCLUDES A SPECIALLY DESIGNED MITCHELL MOTION PICTURE CAMERA WITH AN IMAGE ORTHICON TELEVISION CAMERA IN A SINGLE OPERATING UNIT. AN OPTICAL SYSTEM SPLITS THE LIGHT SO THAT IT IS SHARED BY THE FILM AND ELECTRONIC PICK UP SECTIONS AT THE SAME TIME.

USING A TV TECHNIQUE, IT IS POSSIBLE TO FILM GLEASON'S HALF-HOUR PROGRAM WITH A TWO-HOUR AFTERNOON REHEARSAL PERIOD FOLLOWED BY AN EVENING PERFORMANCE BEFORE A LIVE AUDIENCE. THREE 35 MM CAMERA UNITS ARE USED, PROVIDING SIMULTANEOUS IMAGES ON TV SCREENS AND ON FILM. THE DIRECTOR SELECTS THE SHOTS BY MEANS OF PUSH BUTTONS. BY THE USE OF THIS NEWLY DEVELOPED SYSTEM, IT IS POSSIBLE TO RECORD A SHOW IN ONE TENTH THE TIME REQUIRED USING STANDARD MOTION PICTURE TECHNIQUES.

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BERTEN HOLMBERG, OF THE NAEB ENGINEERING COMMITTEE, KUOM, AND THE TWIN CITY AREA ETV CORPORATION, WRITES THAT HE HAS RECENTLY RECEIVED INFORMATION ON THE EXACT PROCEDURES FOR SWEEPING OUT GENERAL PRECISION LABORATORY CAMERA CONTROLS. THEY ARE ALSO IN RECEIPT OF A FIELD MODIFICATION WHICH CORRECTS A TARGET BLANKING DIFFICULTY WHICH HE STATES WAS ALMOST AN IDENTICAL VERSION OF THE ONE THEY DEVELOPED TO TAKE CARE OF THIS MATTER IN THEIR CAMERA.

THIS BRINGS UP A SERVICE WHICH WE HOPE ALL OF YOU ARE AWARE OF. MOST TELEVISION EQUIPMENT MANUFACTURERS FIND IT NECESSARY TO MAKE MODIFICATIONS TO EQUIPMENT AFTER IT IS IN THE HANDS OF BROADCASTERS. YOU SHOULD AUTOMATICALLY RECEIVE THESE MODIFICATIONS WHICH HAVE BEEN FOUND NECESSARY TO ELIMINATE MAL-FUNCTIONING WHICH MAY NOT HAVE BEEN OBSERVED WHEN THE EQUIPMENT WAS DEVELOPED AND WHICH, THROUGH USE, BECOMES APPARENT. IF YOU ARE NOT RECEIVING OCCASIONAL DATA FROM THE MANUFACTURER OF THE EQUIPMENT YOU ARE USING, WE SUGGEST YOU ASK TO BE PLACED UPON THEIR MAILING LIST TO RECEIVE ANY AND ALL MODIFICATIONS TO IMPROVE THE OPERATION OF EQUIPMENT.

RCA PUBLISHES A "TECHNICAL BULLETIN, MAINTENANCE AND MODIFICATION NOTES ON RCA BROADCAST EQUIPMENT." GENERAL ELECTRIC PUBLISHES "BROADCAST EQUIPMENT PRODUCT SERVICE DIGEST." NO DOUBT DUMONT, GPL AND OTHER EQUIPMENT MANUFACTURERS PUBLISH OCCASIONAL BULLETINS OF THE SAME TYPE ON THEIR EQUIPMENT.

IT WILL SAVE YOU MUCH TIME AND EFFORT IF YOU RECEIVE THESE MODIFICATIONS OF YOUR EQUIPMENT. DON'T THROW THEM IN A DRAWER AND FORGET ABOUT THEM. THEY ARE ISSUED ONLY TO HELP YOU GET THE BEST FROM YOUR EQUIPMENT.



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TV TECHNICAL TIPS No. 14  
November, 1955  
By CECIL S. BIDLACK, NAEB TV ENGINEER

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THIS COLUMN WILL OF NECESSITY BE BRIEF AND IN KEEPING WITH THE REMAINDER OF THE NOVEMBER NEWSLETTER. FIRST, THE DEADLINE FOR COPY HAS PASSED AND BEFORE WE KNOW IT ANOTHER DEADLINE WILL BE STARING US IN THE FACE. SECOND, WE WERE TRAVELING TWENTY-THREE OF OCTOBER'S THIRTY-ONE DAYS WITH ONLY TWO DAYS BETWEEN OCTOBER 4 AND 31 IN THE OFFICE, WHICH IS HARDLY ENOUGH TO GET BACK INTO THE ROUTINE, MUCH LESS GET OUT THIS COLUMN.

BRIEFLY, WE SPENT OCTOBER 4 IN CHICAGO AT THE AIEE MEETING ON CLOSED CIRCUIT TV, THE 5TH AT FORDHAM UNIVERSITY TO DISCUSS THEIR PROPOSED CLOSED CIRCUIT VIDICON INSTALLATION, AND OCTOBER 6 AND 7 AT THE SMPTE MEETING IN LAKE PLACID. A PORTION OF THE MORNING SESSION ON THE 7TH WAS DEVOTED TO EDUCATIONAL TELEVISION WITH PAPERS BY MRS. G. G. BRODERICK OF THE U.S. OFFICE OF EDUCATION, ART HUNGERFORD OF META, NEW YORK CITY, AND ALLEN DELAND OF ETRC. OCTOBER 10 WE SPENT IN BOSTON IN THE VERY FINE STUDIO OF WGBH-TV-FM. OCTOBER 12-15 WE WERE BACK IN NEW YORK ATTENDING THE TECHNICAL SESSIONS OF THE AUDIO ENGINEERING SOCIETY WHERE WE PRESENTED A PAPER ON THE OPERATION OF THE NAEB NETWORK ON THE 14TH.

DICK RIDER AND YOURS TRULY SPENT OCTOBER 19 IN LAFAYETTE, INDIANA AT WBAA WITH JIM MILES AND RALPH TOWNSLEY GOING OVER THEIR TELEVISION STUDIO PLANS. DICK WAS RETURNED TO CHAMPAIGN AND EIGHT P.M. ON OCTOBER 20 FOUND US IN TUSCALOOSA, ALABAMA WITH GRAYDON AUSMUS. WE SPENT FOUR DAYS WITH JOE STUCKEY, UOA-TV CHIEF ENGINEER GOING OVER HIS INSTALLATION AND OPERATION PREPARATORY TO THEIR FIRST PROGRAM FEED TO THE ALABAMA NETWORK ON OCTOBER 31. WE MADE A SIDE TRIP TO AUBURN WHERE WE MET ED WEGENER AND GEORGE MURPHY. THEY HAVE A FINE NEW BUILDING WHICH, LIKE WGBH-TV, THEY HAVE ALREADY OUTGROWN AND ARE SEEKING AVAILABLE SPACE ADJACENT TO THEIR PRESENT FACILITIES.

ON OUR WAY TO CHICAGO, OCTOBER 25 WE MET KEN CHRISTIANSEN OF THE SOUTHERN REGIONAL EDUCATION BOARD AND THE ATLANTA SCHOOLS TV STATION. OCTOBER 26-29 WE ATTENDED THE NAEB CONVENTION IN CHICAGO WHERE AL PARTRIDGE PUT US TO WORK AS A PROJECTIONIST.

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WE CAN'T MENTION THE NAEB CONVENTION WITHOUT EXPRESSING A WISH THAT MORE ENGINEERS WERE IN ATTENDANCE. GOING OVER THE REGISTRATION LIST WE FOUND ONLY SIX ENGINEERS REGISTERED. OF THESE, ONLY TWO, GLEN BISHOP OF WMCB AND CARL MENZER OF WSUI WERE FROM OPERATING STATIONS, THREE WERE REPRESENTATIVES OF EQUIPMENT MANUFACTURERS. THE WRITER OF THIS COLUMN COMPLETED THE LIST. WE BELIEVE THAT MANY TELEVISION ENGINEERS WOULD HAVE BEEN INTERESTED IN MANY OF THE SESSIONS ON TELEVISION. NO DOUBT THE RADIO SESSIONS WOULD HAVE BEEN INFORMATIVE TO THOSE WHOSE PRIMARY INTEREST IS RADIO. THE THURSDAY AFTERNOON CONVENTION PROGRAM FEATURED A TOUR THROUGH THE SPACIOUS STUDIO FACIL-

ITIES OF WTTW WHERE DUANE WEISE AND HIS ENGINEERING CREW WERE FINISHING THEIR EQUIPMENT INSTALLATION. PRESENT WTTW LIVE PROGRAMMING IS COMING FROM THE CHICAGO BOARD OF EDUCATION TV STUDIO, WHERE "ANDY" ANDRESEN'S WBEZ CREW IS WORKING OVERTIME ON THE WTTW OPERATION. "ANDY" ALSO ATTENDED SOME OF THE CONVENTION SESSIONS BUT ONLY IN A WORKING CAPACITY, RECORDING SOME OF THE FEATURED SPEAKERS.

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A NEW 450 PAGE BOOK "COLOR TELEVISION ENGINEERING" BY JOHN W. WENTWORTH OF RCA WAS PUBLISHED IN OCTOBER BY MCGRAW HILL. DESIGNED FOR ENGINEERS AND TECHNICIANS WHO ARE ALREADY FAMILIAR WITH BASIC PRINCIPLES OF MONOCHROME TV, IT DEALS WITH COLOR TELEVISION THEORY AND EXPLAINS IT IN SIMPLE, LARGELY NON-MATHEMATICAL FORM. OVER 290 ILLUSTRATIONS ARE INCLUDED, AND THE PRICE IS \$8.00.

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THE ALLEN B. DUMONT LABORATORIES DURING OCTOBER CHANGED THE METHOD OF SALES AND DISTRIBUTION OF ITS TELEVISION TRANSMITTING AND STUDIO EQUIPMENT. INSTEAD OF THE PARENT COMPANY HANDLING SALES OF THIS EQUIPMENT, FIVE SEPARATE SALES CORPORATIONS NOW REPRESENT DUMONT, COVERING EVERY STATE IN THE U. S. AS WELL AS HAWAII AND ALASKA.

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LOUIS L. LEWIS, EDUCATIONAL COORDINATOR FOR RCA, IS NOW EDITING A BI-WEEKLY EDUCATIONAL TV NEWSLETTER WHICH GOES PRIMARILY TO ADMINISTRATORS OF EDUCATIONAL INSTITUTIONS. HE HOPES IN THIS PUBLICATION TO SHOW PROGRESS BEING MADE IN THE USE OF TELEVISION IN EDUCATION AS WELL AS TO MAKE IT A MEDIUM FOR THE EXCHANGE OF IDEAS IN THIS RAPIDLY EXPANDING FIELD.

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THE FEDERAL COMMUNICATIONS COMMISSION HAS RECENTLY REVISED ITS LIST OF TRANSMITTERS AND MONITORS ACCEPTABLE FOR USE IN AURAL BROADCAST SERVICES (AM AND FM). COPIES OF THIS LIST HAVE BEEN MADE AND ARE ON FILE AT NAEB HEADQUARTERS. IF YOU HAVE A QUESTION ON THE ACCEPTABILITY OF THE ABOVE EQUIPMENT, WE SHALL BE HAPPY TO ANSWER YOUR INQUIRIES AS FAR AS THE INFORMATION ON HAND PERMITS. THIS LIST IS DATED AUGUST 18, 1955.

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A NUMBER OF PEOPLE ATTENDING THE NAEB CONVENTION MENTIONED TO OTHER STAFF MEMBERS THAT THEY WOULD LIKE US TO RUN A "SWAP-SHOP" OF SOME KIND IN THE NEWSLETTER. WE ARE VERY HAPPY TO MENTION SUCH ITEMS IN THE NEWSLETTER, EITHER THOSE FOR SALE OR WANTED. HOWEVER, OUR CRYSTAL BALL IS A LITTLE DULL AND WE HAVE TROUBLE KNOWING WHAT YOU HAVE FOR SALE AND WHAT YOU WANT UNLESS YOU WRITE US. WE REPEAT WHAT WE SAID IN THE OCTOBER NEWSLETTER -- DEADLINE IS THE 25TH OF THE MONTH; GET YOUR ITEMS IN BEFORE THAT DATE.



CLASSIFYING 16MM. "EMULSION POSITIONS" AND "FILM WINDS"

By Berten A. Holmberg  
Chief Engineer  
Radio Station KUOM

General

One of the more vital abilities which a person who handles 16mm. motion picture film should have is that of being adept in classifying film stock according to its "wind" and its "emulsion position." Often this must be done in a minimum of time and under lighting conditions which are far from optimum. Since a mistake can waste much valuable film, it is well to commit a few simple rules to memory.

After a discussion of these rules and corresponding definitions, there will be presented herewith a proposal for simplifying certain terminology and practices related to 16mm. film production.

Raw Stocks--"A Wind and B Wind"

The first of these terms, "wind" refers to the manner in which single perforated 16mm. raw stock is wound onto cores as supplied by the film manufacturer. While raw film is always supplied with its emulsion wound toward the center of the core, there still remains the alternative of spooling it in such a manner that the row of sprocket perforations is either on the near or the far edge of the roll when it is placed into position in a camera or printer.

A little experimentation with a few feet of single perforated film will show that the position of the perforations is determined by one's choice of the film end that is attached to the center of the core when commencing winding. This assumes, of course, that one winds the film with the emulsion toward the center of the core as is standard practice for raw stock.

In order to allow for differences in design and manufacture of various film handling devices which may call for one or the other sprocket position, it is customary for manufacturers of film to supply 16mm. single perforated stock in either of two "winds" which they designate as "A Wind" and "B Wind." These can be quite easily distinguished from each other by inspection and the application of a simple rule. After verifying the fact that the emulsion is on the side of the film toward the core, it is merely necessary to hold up the roll of stock in such a position that the outer tail of the film hangs down from the right edge of roll. When held in this position "A Wind" stock has the sprocket perforations on the edge nearest the observer, while "B Wind" stock has the perforations on the edge away from the observer. Obviously it is possible to develop a similar rule based on having the tail of film hanging down from the left edge of the roll. Whatever the case may be, it is best that one or the other rule be used consistently so as not to become confused. Actually, film which is supplied as one type of "wind" can be converted to the other type by the simple operation of rewinding it onto another hub with the emulsion facing the axis.

In general, motion picture cameras designed for single sprocket operation, such as simultaneous sound and picture taking devices, use "B Wind" stock. Kinescope recorders and Auricon cameras fall into this category. On the other hand, most contact film printers, for example the Bell and Howell Model J, load with "A Wind" raw stock. Where sound exposure and sound printing is not a factor, cameras and printers can usually be loaded with double perforated stock which, obviously, cannot be classified according to "wind" in light of its accepted definition.

#### Emulsion Position--Standard and Non-Standard

A person who has operated 16mm. projectors is likely aware of the fact that some films thread-up with the emulsion toward the screen while other films project with the emulsion surface toward the lamp. The first of these positions (emulsion toward the screen) is defined by the Society of Motion Picture and Television Engineers as "STANDARD EMULSION POSITION"; the latter (emulsion toward the lamp) is defined as "NON-STANDARD EMULSION POSITION." In order to compensate for this slight change in the focal plane of the emulsion image, it is usually necessary to change the focus of the projector lens a small amount to obtain maximum sharpness. Similar compensation for sound focus is desirable but must be effected by an adjustment of the tone control unless the projector is equipped with controls for the adjustment of the sound optical system. Improper focus in the sound optical system results in the loss of high frequencies and impaired signal-to-noise ratio of the sound reproduction.

The differences in emulsion position result from the fact that in the contact printing of one film onto another the resulting impression is a mirror image of the original rather than an identical image. This paradox can be illustrated very simply by having a person stand before a mirror and observing the reflected image. In such a situation, when the subject moves his right hand, the image moves its left, etc. When contact printing from a negative film onto a print copy, it is necessary to have the two emulsion surfaces facing each other in order to assure the maximum in transmitted detail. Therefore the print copy becomes the mirror image of the negative, in which case left becomes right and vice versa, when the two films are compared symmetrically and with their emulsions facing the observer. Should the original and the copy be run consecutively through a projector, it would be necessary to thread up the latter in such a way that its emulsion would face in the opposite direction from the former if one wishes to preserve the same "left-to-right" relationship of the projected image.

Such a switch is possible in the case of "silent" type 16mm. film where the double sprocket holes permit running the film in either manner. However, in the case of 16mm. sound film, which utilizes only one set of sprocket holes, there is only one way in which to pass the film through the projector unless one runs the film "tails first" and thus produces an image and sound running in reverse order. Accordingly, the proper "left-to-right" relationship must be established during processing and printing operations in such a manner that normal projection is possible. These operations may produce a print having either "Standard" or "Non-Standard" emulsion position, depending largely on the number of printing operations required to integrate various scenes and sound tracks into the desired release copy.

It seems obvious therefore that persons engaged in film processing and printing must ascribe certain types of nomenclature to the inherent image relationships which exist on the film being handled. Since the processing procedures in a single production may involve several sound and picture printing operations on diverse film stock, strict adherence to such uniform nomenclature and procedure is mandatory in order to eliminate prints in which words appear backward etc.



Largely because of the foregoing reasons, industry has standardized upon the two terms, "Standard" and "Non-Standard" emulsion position which correspond to the two inherent image relationships that might exist upon a 16mm. film. Once a film has been exposed and processed to produce an image it is possible to classify its emulsion position by visual inspection in accordance with simple rules such as those outlined in the following section.

#### How to Tell Emulsion Position By Inspection

In order to determine the "Emulsion Position" of a particular 16mm. film, either negative or positive, the following rules apply without restrictions.

"Standard Emulsion Position" - Hold up a piece of film vertically with the top of the picture upward. Left and right picture detail appear normal only when emulsion surface is away from the eye. (In the case of 16mm. sound release film the sprocket holes will be on the left.)

"Non-Standard Emulsion Position" - Hold up a piece of film vertically with the top of the picture upward. Left and right picture detail appears normal only when emulsion surface is toward the eye. (In the case of 16mm. sound release film the sprocket holes will be on the left.)

If on a 16mm. sound release film, the sprocket holes should be found to be on the right side instead of the left, then, assuredly, someone has "goofed" in the printing procedure. Such a print has a "hybrid" or ambiguous emulsion position and cannot be projected without accepting the fact that "left and right" will be reversed on the screen.

To be meaningful to the projectionist such inspection must be made directly on the print or film which is intended for projection rather than by examination of negatives or intermediate duplicating stock. Since the emulsion position reverses itself each time contact printing occurs, great care must be exercised when predicting the emulsion position of the release print on the basis of one's inspection of the negatives.

#### A Proposal for Simpler Terminology

Even at best the terms "Standard Emulsion Position" and "Non-Standard Emulsion Position" are awkward choices for terminology which must undergo such frequent verbalization when discussing these matters. Furthermore, if one takes a cross-section of available 16mm. prints in daily usage, there seems to be nothing particularly standard about emulsion position except the definition alone. A goodly number of prints which are made by what we normally call the "double system" end up with the emulsion facing the projection lamp, which is strictly "Non-Standard" according to SMPTE definitions.

Another failing of this terminology is that it does not serve to specify either the location or type of sprocket perforations on a particular film. This is of course of little concern to a projectionist since single perforated film will only thread in one manner when fed heads first. However, there are instances in printing procedure where one must make rather discreet choices involving both sprocket position and emulsion position in order that the final print be projectable in a correct manner.



Just for the sake of experiment and, perhaps, simplification of words, let us see if it is possible to make a more convenient selection of terminology for describing emulsion position. Let us assume that for lack of any better identification we take the letters "A" and "B" to denote the two types of emulsion position. Having done so let us try to make some decision as to which of these might most appropriately denote "Standard Emulsion Position" and which one would be "Non-Standard Emulsion Position." In shopping around for some basis for decision one cannot help but be intrigued by the fact that when we attempt to thread a roll of "B Wind" raw stock into a standard projector, the unexposed emulsion is in the "Standard" position. Conversely, the opposite is true for "A Wind" stock. Upon first inspection this does not seem to have any particular significance since such stock is unexposed. However, accepting this similarity for whatever it is worth let us draw upon the fact by substituting the term "A Wind Emulsion Position" for the term "Non-Standard Emulsion Position." Likewise we will substitute the term "B Wind Emulsion Position" for the term "Standard Emulsion Position."

At this point it would seem that even a further change is possible. Since we have decided to use the letters "A" and "B" for describing both "wind" and "emulsion position" let us drop this latter term entirely and refer to all 16mm. film stocks as being either "A Wind" or "B Wind," irregardless of whether they be raw or exposed, negative or positive, single or double perforated etc. Such a step has the effect of creating a new and needed identification which describes a film in terms of both its emulsion position as well as its wind, wherever applicable.

Now, let us see what happens when we try to apply the foregoing definitions in actual film practice. First let us recognize the fact that double perforated raw unexposed film has no particular "wind" designation and accordingly can be considered as "A B Wind" or more simply "universal" wind. This is true only up until the time that it is run through a camera or a printer, after which it definitely acquires according to our new definition a "wind" designation of either "A" or "B." In the case of cameras, this "wind" designation would be always "B." In the case of contact printers, the resulting "wind" designation will be determined by two interlocking factors which, on one hand, involves the order of the printing operation as to "Heads First" or "Tails First," and on the other hand involves the type of single sprocket raw stock which the printer is designed to handle. This is true even though the printer may be loaded with double sprocket stock since the printer has only a single sprocket drive.

Another point which must be recognized is the fact that in all contact printing operations a negative of a particular "wind" will always produce a print of the opposite "wind." Provided that one observes the simple, memorizable rules which will follow herewith, no condition should arise which will produce an ambiguous release print of a type which cannot be projected to produce proper vertical and horizontal image symmetry as well as proper sound and time sense.

#### Applying Proposed Terminology

After making the indicated changes in terminology our rules for determining film "wind" by inspection of processed stock are as follows:

"A Wind Film" - Hold up a piece of film vertically with the top of the picture upward. Left and right picture detail appear normal only when the emulsion surface is toward the eye. (In the case of 16mm. sound film the sprocket holes will be on the left).

"B Wind Film" - Hold up a piece of film vertically with the top of the picture upward. Left and right picture detail appear normal only when the emulsion surface is away from the eye. (In the case of 16mm. sound film the sprocket holes will be on the left).

The rule for determining by inspection the "wind" of raw stock remains the same as that shown earlier in this paper.

The rules and fact which must be remembered when planning contact printing operations are as follows:

Rule 1--The following contact printing operations involve no special observations other than insuring the fact that the two emulsion surfaces are face to face. No ambiguous alternatives are possible in these cases.

- (a) Printing Double Perforated Negative Onto Double Perforated Raw Stock
- (b) Printing Single Perforated Negative Onto Single Perforated Raw Stock
- (c) Printing Single Perforated Negative Onto Double Perforated Raw Stock

Rule 2--It is in the case of contact printing double perforated negatives onto single perforated raw stock where an improper choice of two alternatives can result in the production of an ambiguous print which will project with the left and right sense of the image reversed. Since a double perforated negative can be printed either "heads first" or "tails first," one must determine which of these two alternatives apply in each particular case. In order to make such a determination one must ascertain two facts. First, ascertain the "wind" of the negative to be printed. Then ascertain which "wind" of raw stock the particular contact printer is designed to handle. If these two "winds" are the same, the printing operation must proceed "tails first." If they are opposite, it must proceed "heads first."

	<u>Negative Wind</u>	<u>Raw Wind</u>	<u>Printing Order</u>	<u>Resulting Print Wind</u>
Case 1	B	A	Heads First	A
Case 2	B	B	Tails First	A
Case 3	A	A	Tails First	B
Case 4	A	B	Heads First	B

#### Sound Stock Terminology

As it has been indicated previously, the foregoing method for breaking down 16mm. films into two "winds" can be applied equally well to both single and double perforated stock, although it has particular significance only in the production of single perforated sound releases. This, of course, implies that similar consideration must be given to the matter of typing the sound printing negatives which are used in exposing the film under consideration. Such identification is rather simple



in that the "wind" of the sound negative is identical to that of the single perforated raw stock which is used to load the sound recorder, provided that the sound is played into the recorder in the normal or intelligible manner. Should the sound be played into the recorder in the reverse or "gibberish" direction, the resulting exposure becomes the opposite to that of the raw stock which is being used. This can be summarized in the following manner:

Rule 3--

	<u>"Wind" of Raw Stock</u>	<u>Sound Feed Playing Direction</u>	<u>Wind of Exposure</u>
Case 1	A	Forward	A
Case 2	A	Reverse	B
Case 3	B	Forward	B
Case 4	B	Reverse	A

Since both the final picture printing negative and the sound optical negative will in turn be used to expose the same release print, it is obvious that their "wind" must be the same. In other words, an "A Wind" picture printing negative calls for the preparation of an "A Wind" sound printing optical negative, and vice versa.

Consideration Involving 35mm. Film

It is possible that the previously outlined method for classifying films into two broad types can also be applied to the field of 35mm. motion pictures. Since the production of professional movies involves multiples of one additional printing operation, the resulting standard emulsion position is toward the projection lamp. To allow for this situation, the SMPTE standards concerning 35mm. emulsion position are directly opposite to those which they define for 16mm. film. Accordingly, "Standard Emulsion Position" for 35mm. films is in the direction of the light source while the emulsion position facing the screen is "Non-Standard."

Conclusion

It may be interesting for the reader to know that the foregoing approach to classifying 16mm. film and attendant operations was evolved from the sheer ignorance of how to properly apply the existing standards. The incident which led to this situation occurred when a kinescope recorder was purchased by the University of Minnesota and its operation was commenced by a group of radio engineers who knew little or nothing about film techniques.

Using only fragmentary knowledge regarding winds and emulsion positions, this group began to converse in a language which was found upon later examination to be completely inconsistent with that in prevalent usage by film technicians. Nonetheless the definitions seemed to work rather well and permitted film handling operations to be scheduled with little or no misunderstanding.



There may be, however, some broader objection to the use of the methods which have been herein proposed. For instance one might logically take exception to the use of the term "wind" to describe the combined relationships. At first it was thought that the word "type" would be more appropriate. However, as one film producer pointed out, this might be easily confused with accepted terminology used to describe the Kelvin temperature characteristics of color films.

Upon reconsideration it seems that use of the word "wind" creates no real conflicts, even though the word itself is not necessarily appropriate. It might be best to look upon this usage as an extension of the present definition of "wind" rather than an alteration of its basic meaning. On the other hand perhaps someone can suggest another suitable term, such as "class" or "style," for describing this quantity.

It is left, therefore, to the scrutiny of wiser and more experienced minds to evaluate the wisdom of certain assumptions which have been made. The writer will be extremely grateful to receive comments regarding this material from people who are well seasoned on the art of 16mm. film processing. Until such a time that these ideas can be adequately evaluated it is best that they be treated as contemporary discussion and material for thought and experimentation.

## TARGET BLANKING PROBLEMS IN IMAGE ORTHICON CAMERAS

by Berten A. Holmberg  
Chief Engineer of KUOM

It is extremely advisable that the television camera service engineer pay rather strict attention to the matter of wave-form existing at the point where camera blanking is applied to the target control circuit. As is the case when observing most waveforms on an oscilloscope, one is prone to judge the magnitude of any discrepancy in wave shape more on the basis of its comparison with the overall amplitude of the phenomena being displayed than by its arithmetic value in volts.

This can lead to trouble in the case of the target voltage, where the total amount of target blanking may be considerably in excess of the actual useful amount required to drive the front end into cutoff during retraces. In this particular instance it is very necessary to judge the operation of the blanking circuit on the absolute value of the variation in volts occurring during the active line period as well as during an overall field period.

Since the useable differential in target setup is only a matter of two volts, any small fraction of a volt discrepancy occurring over a line or field period can have bad effects. These effects are not only confined to the matter of the horizontal and vertical shading of the picture. It is not sufficient that proper shading can be restored at another part of the circuit by the introduction of a corrective saw voltage. A more important consideration is that of the irrecoverable damage done to the quality of the overall picture due to the inconsistency of beam vs. target criteria which exists over the general target area when a small amount of target voltage variation is present.

Obviously, there is only one optimum amount of beam current for a particular amount of target voltage. Therefore the very basic quality of the charge image can be seriously altered by even a few tenths of a volt difference in the target circuit during a line or field period.

Usually the source of this tilt lies in the time constant of the target coupling circuit. While some improvement can be effected by increasing the value of the coupling condenser, it is far better to use a diode restorer across the target resistor. Furthermore, increasing the value of the coupling condenser has the detrimental effect of making the target voltage control very sluggish.

An examination of the target blanking circuits used in leading cameras has disclosed that perhaps too little emphasis has been placed on target circuit design by some manufacturers. In some brands a D.C. restorer is used to achieve relative constancy of the target pedestal period. This, however, due to the finite diode resistance, still falls a little short of what would be ideal. Another brand completely ignores the problem and from what can be deduced falls back on corrective shading as an attempted remedy.

Perhaps a good clipper circuit in the target blanking mixer output used in connection with D.C. restoration at the target would be the most effective solution.

It will be wise that engineers make a careful examination of the absolute (numerical volt) target voltage tilt during active line and overall field periods when tracing camera shading trouble. If the variations are in excess of a few per cent of the normal target setup voltage, then steps should be taken to reduce the tilt.

DATA ON EASTMAN 7374 NEGATIVE FILM STOCK

by Keith K. Ketcham  
Chief Engineer, WOI-AM-FM-TV

Here is a brief analysis of the new Eastman Kodak 7374 film stock which we feel has amazing possibilities for kinescope recording negative work. The sensitometric plots show the characteristics of the 7374 negative stock in Figure 1, the 7302 stock in Figure 2, and print through sensi in Figure 3.

First of all, let me say that the reproduction on this film stock, printed in accordance with the attached, far exceeds any other method we have used in regard to tonal reproduction, both from the standpoint of viewing the picture and as shown from the curves in Figure 3. There is very little curvature, although some is evident in both the black and white end of the picture. By comparing this print through sensi with those of the 7302-7302 or the 7373-7302 process, we find this one to have essentially a linear range from the usable black to the usable white as compared with these other processes.

The plot of Figure 1 represents the measurements of a 21 strip sensitometric exposure at the head of a strip of Eastman Kodak 7374 film. There are only 19 points plotted, since the remaining three points were down near base density and were of no interest to us. We then exposed this film to a negative electronic grey scale, consisting of 10 equal steps of black and white. Our original intention was to obtain an over-all sensi density range of near 1.0, which we did, in that the zero per cent step gave a density of 0.18 and the 100% white step gave a density of 1.18 (1.18 - 0.18 is 1.0). Allowing for a nominal 10% setup in the video picture, and realizing, as a practical matter, that the setup in a picture may vary from five to ten per cent, we pegged our black level at the ten per cent step giving a density of 0.33. This was done using a GPL machine having a 10-NP-11 transcriber tube, operating at 25,000 volts on the anode. The camera was operated with a lens stop of F-2.0, and the peak to peak driving voltage applied to the grid from the electronic grey scale was 18 volts.

The nominal gamma of this developed negative Eastman Kodak 7374 was 1.0.

Figure 2 shows a partial sensitometric plot of the print stock used in this particular test. In this case, Eastman Kodak 7302, processed to a gamma of 2.50 was used. Here, again, you will note that only 13 of the 21 steps have been plotted, since we were not interested in exposures near base density and were trying our utmost to steer clear of this region. Figure 3 is a plot of the negative sensi printed through the positive release stock and shows a total maximum density variation at the particular parameters used of 0.05 to 2.15.

In a release entitled "Specifications for Motion Picture Film Intended for Television Transmission" by Charles Townsend of NBC-TV in New York, we glean the following information. The release print stock should have a density range of approximately 1.5 and should nominally range between 0.4 and 1.9. You will note that the zero per cent blanking region, as originally exposed on the negative stock, gave a density of 1.95 on the print stock and the 100% blanking (white level) over-shot our mark a little bit and hit 0.30 at 100% blanking (white level).



Figure 3 represents a composite tonal reproduction curve of the curvature suffered on the negative added to the curvature suffered on the positive. In comparing this particular curve to similar curves obtained by using 7373-7302, or the 7302-7302 method, it shows this curve to be considerably more linear in both black and white regions than either of the other methods.

I am sure you can realize the distinct advantage of having a film stock such as this which is relatively fast and yet processes out with a very gentle toe and shoulder. As can be seen by the printed sensi on Figure 3, there is very little black compression and very little white compression in the picture. When viewing these prints, either on a television system or by direct projection, there is certainly a greater physiological advantage in the more faithful tonal reproduction characteristics of this system as compared with other methods.

Obviously the kinescopes look more lifelike and faithful in their reproduction, and they are; but they also look considerably sharper than those produced by other methods, even through resolution charts exposed by both processes look very nearly alike.

Test 105, 5:30 PM NEWS, Pix Only  
 Negative, E.K.-7374, Gamma = 1.0  
 Processed by ISC, V.A.P.  
 September 9, 1955 Krajewski

Negative Grey Scale      Anode Voltage = 25K  
 \*Blanking, 0% = 0.18      Driving Voltage = 18  
                  10% = 0.33      Lens = f/2.0  
                  100% = 1.18

Negative Sensi--

0.08  
 0.10  
 0.13  
 0.17  
 0.23  
 0.30  
 0.37  
 0.45  
 0.59  
 0.67  
 0.79  
 0.94  
 1.16  
 1.30  
 1.45  
 1.60  
 1.71  
 1.82  
 1.95

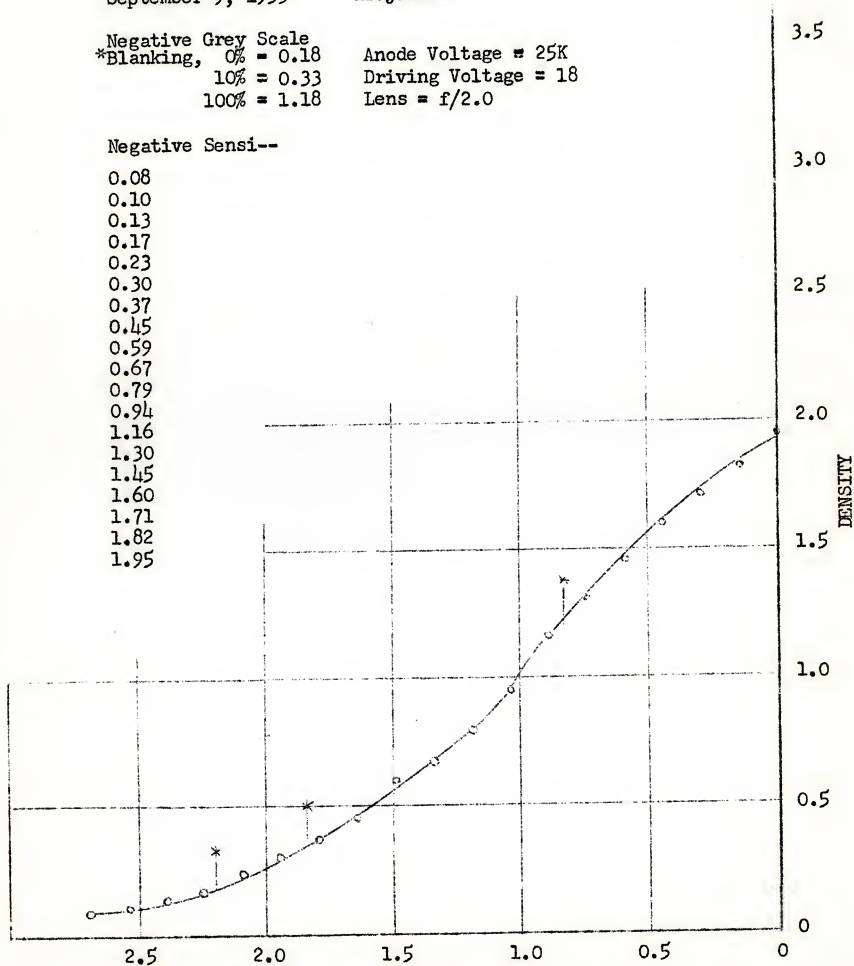


Figure 1

DKH

E.K.-7302, Gamma = 2.50  
 Processed by ISC, V.A.P.

Positive Sensi--

0.12  
 0.15  
 0.22  
 0.35  
 0.50  
 0.76  
 1.07  
 1.47  
 1.85  
 2.20  
 2.58  
 2.85  
 3.40

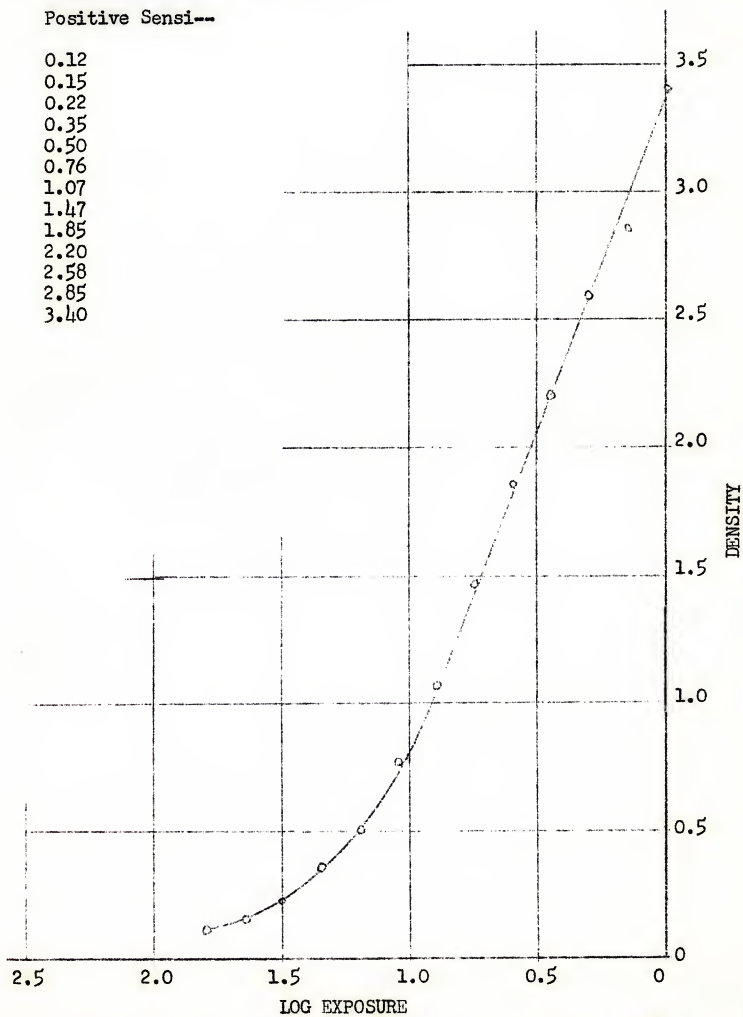


Figure 2

DKH



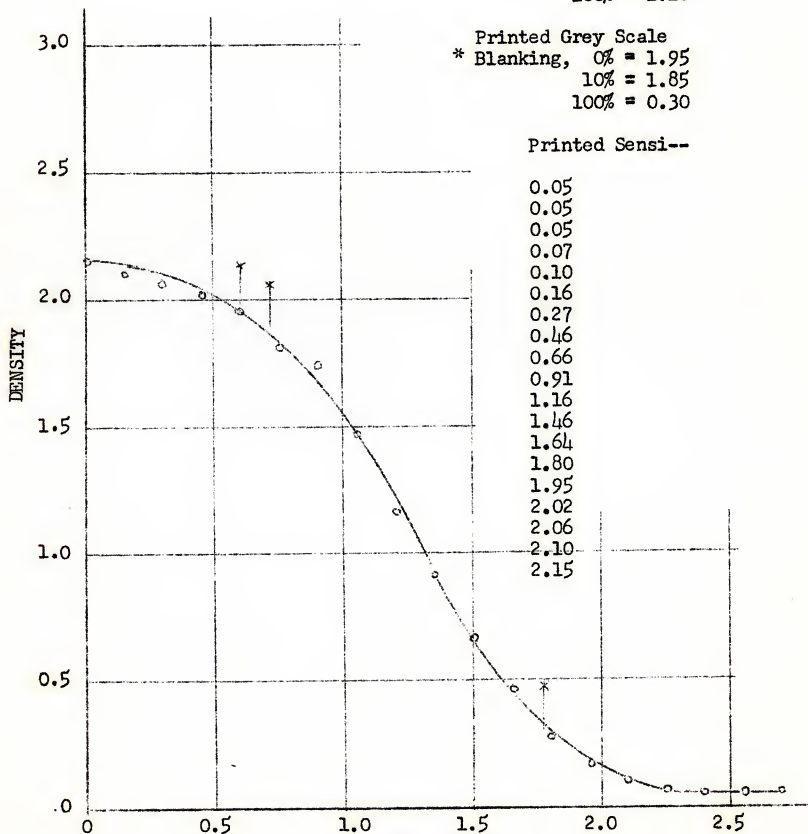
Test 105, 5:30 PM NEWS, Pix Only  
 Negative, E.K.-7374, Gamma = 1.0  
 Print, E.K.-7302, Gamma = 2.5  
 Process & Print by ISC, -V.A.P.  
 September 9, 1955 Krajewski

3.5

Negative Grey Scale  
 Blanking, 0% = 0.18  
 10% = 0.33  
 100% = 1.18

Printed Grey Scale  
 \* Blanking, 0% = 1.95  
 10% = 1.85  
 100% = 0.30

Printed Sensi--



LOG EXPOSURE

Figure 3

DKH

Scanned from the National Association of Educational Broadcasters Records  
at the Wisconsin Historical Society as part of  
"Unlocking the Airwaves: Revitalizing an Early Public and Educational Radio Collection."



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